WHAT IS CLAIMED IS:

1. A method for enhancing a digital image channel comprised of a plurality of image pixels, said method comprising the steps of:

(a) splitting the digital image channel into first and second signals that substantially comprise the digital image channel, said first and second signals each characterized by image values corresponding to the image pixels;

(b) providing a predetermined tone scale conversion to enhance the digital image channel;

(c) providing image values from the first signal corresponding to image pixels from a region of the image:

(d) identifying a statistical characteristic of the image pixels in the region;

(e) normalizing the predetermined tone scale conversion for the statistical characteristic in order to generate a normalized tone scale conversion;

(f) performing the normalized tone scale conversion on a central pixel of the region in order to generate a first signal with enhanced image values; and

(g) combining the first signal with enhanced image values and the second signal to generate an enhanced digital image channel.

2. The method of claim 1 in which the first signal is a low pass signal and the second signal is a high pass signal.

3. The method of claim 1 in which the first signal is a pedestal signal characteristic of edges in the digital image channel and the second signal is a texture signal characteristic of texture in the digital image channel.

4. The method of claim 1 in which the second signal is modified before it is combined with the first signal.

5. The method of claim 1 in which the region of step (c) comprises providing image pixels from a two dimensional region distributed around the central pixel.

6. The method of claim 5 in which the region of step (c) comprises a 5 X 5 or smaller array of image pixels.

7. The method of claim 1 in which step (d) comprises determining a gradient value within the region.

8. The method of claim 7 in which the gradient value is derived from a maximum and a minimum value for the region.

9. The method of claim 8 in which the gradient value is computed from the difference between maximum and minimum image values of image pixels within the region.

10. The method of claim 7 in which the gradient value is computed from the difference between average maximum and minimum values across respective pluralities of image pixels comprising portions of the region.

11. The method of claim 1 in which step (b) includes the application of a predetermined tone scale function, step (e) comprises normalizing the value of the central image pixel input to the tone scale function with a scaling function based on the statistical characteristic, and step (f) comprises mapping the scaled value of the central pixel through the tone scale function to generate an intermediate output value.

12. The method of claim 11 in which step (f) further comprises processing the intermediate value of the central image pixel output from the tone scale function with a function that is the inverse of the scaling function

13. The method of claim 1 in which step (b) includes the application of a predetermined tone scale function and step (e) comprises normalizing the coordinates of the tone scale function based on the statistical characteristic.

14. The method of claim 1 in which step (b) includes application of a predetermined tone scale function, and the method further comprises the step of adjusting a parameter of the tone scale function based on the statistical characteristic of the region.

15. The method of claim 14 in which the step of adjusting a parameter of the tone scale function comprises varying the slope of the tone scale function.

16. The method of claim 1 in which the steps (c) – (f) are repeated for consecutive overlapping regions such that contiguous central pixels are processed through the tone scale conversion.

17. The method of claim 16 wherein steps (e) – (f) include application of a predetermined tone scale function to all central image pixels processed through the normalized tone scale conversion.

18. The method of claim 1 in which step (b) includes the application of a predetermined tone scale function having input and output coordinates, step (e) comprises normalizing the input coordinate of the tone scale function with a scaling function based on the statistical characteristic and normalizing the value of the central pixel output from the tone scale function based on the inverse of the scaling function, and then step (f) comprises mapping the value of the central pixel through the tone scale function to generate a scaled output pixel.

19. The method of claim 1 in which step (b) includes the application of a predetermined tone scale function having input and output coordinates, step (e) comprises normalizing the value of the central pixel input to the tone scale function with a scaling function based on the statistical characteristic and normalizing the output coordinate of the tone scale function based on the inverse of the scaling function, and then step (f) comprises mapping the scaled value of the central pixel through the tone scale function to generate a processed output pixel.

20. A method for enhancing a digital image processed through a digital image channel comprised of a plurality of image pixels, the method comprising the steps of:

(a) splitting the digital image into first and second signals that substantially comprise the digital image channel, said first and second signals each characterized by image pixel values corresponding to the image pixels;

(b) receiving an image pixel value of the first signal from a spatial region of the digital image;

(c) receiving a tone scale function;

(d) calculating a statistical parameter based on the values of other pixels of the first signal in the spatial region of the digital image;

(e) generating a scaling function based upon the statistical parameter;

(f) generating a first intermediate value from the image pixel value and the scaling function;

(g) generating a second intermediate value from the first intermediate value and the tone scale function;

(h) generating an enhanced pixel value from an inverse of the scaling function and the second intermediate value;

(i) combining the first signal with the enhanced pixel value and the second signal to generate an enhanced digital image channel.

21. The method of claim 20 in which the first signal is a low pass signal and the second signal is a high pass signal.

22. The method of claim 20 in which the first signal is a pedestal signal characteristic of edges in the digital image channel and the second signal is a texture signal characteristic of texture in the digital image channel.

23. The method of claim 20 in which the second signal is modified before it is combined with the first signal.

24. The method of claim 20 further comprising the step of repeating steps (b) and (d) – (i) in order to generate an enhanced pixel for each image pixel in the digital image channel.

25. The method of claim 20 wherein the statistical parameter of step (d) is the maximum or minimum of the pixel values from the spatial region of the digital image channel.

26. The method of claim 25 wherein the statistical parameter is used to normalize the tone scale function thereby generating a normalized tone scale function.

27. The method of claim 26 wherein the statistical parameter is used to normalize the original pixel value creating a normalized pixel value.

28. The method of claim 27 wherein the normalized pixel value is modified by the normalized tone scale function.

29. The method of claim 27 wherein the tone scale function is a predetermined sigmoid function.

30. The method of claim 29 wherein the tone scale function is a predetermined sigmoid function used for each pixel in the digital image.

31. The method of claim 29 wherein the tone scale function is a predetermined sigmoid function that is normalized to create a normalized sigmoid function.

32. The method of claim 31 wherein the normalized pixel value is modified by the normalized sigmoid function.

33. The method of claim 29 wherein the step of using a sigmoid function is further comprised of determining the standard deviation of the sigmoid function based upon the statistical parameters.

34. A computer program product for enhancing a digital image channel comprised of a plurality of image pixels, said computer program product comprising: a computer readable storage medium having a computer program stored thereon for performing the steps of:

(a) splitting the digital image channel into first and second signals that substantially comprise the digital image channel, said first and second signals each characterized by image values corresponding to the image pixels;

(b) providing a predetermined tone scale conversion to enhance the digital image channel;

(c) providing image values from the first signal corresponding to image pixels from a region of the image:

(d) identifying a statistical characteristic of the image pixels in the region;

(e) normalizing the predetermined tone scale conversion for the statistical characteristic in order to generate a normalized tone scale conversion;

(f) performing the normalized tone scale conversion on a central pixel of the region in order to generate a first signal with enhanced image values; and

(g) combining the first signal with enhanced image values and the second signal to generate an enhanced digital image channel.

35. The computer program product of claim 34 in which the first signal is a low pass signal and the second signal is a high pass signal.

36. The computer program product of claim 34 in which the first signal is a pedestal signal characteristic of edges in the digital image channel and the second signal is a texture signal characteristic of texture in the digital image channel.

37. The computer program product of claim 34 in which the second signal is modified before it is combined with the first signal.

38. The computer program product of claim 34 in which the region of step (c) comprises providing image pixels from a two dimensional region distributed around the central pixel.

39. The computer program product of claim 38 in which the region of step (c) comprises a 5 X 5 or smaller array of image pixels.

40. The computer program product of claim 34 in which step (d) comprises determining a gradient value within the region.

41. The computer program product of claim 40 in which the gradient value is derived from a maximum and a minimum value for the region.

42. The computer program product of claim 41 in which the gradient value is computed from the difference between maximum and minimum image values of image pixels within the region.

43. The computer program product of claim 40 in which the gradient value is computed from the difference between average maximum and minimum values across respective pluralities of image pixels comprising portions of the region.

44. The computer program product of claim 34 in which step (b) includes the application of a predetermined tone scale function, step (e) comprises normalizing the value of the central image pixel input to the tone scale function with a scaling function based on the statistical characteristic, and step (f) comprises mapping the scaled value of the central pixel through the tone scale function to generate an intermediate output value.

45. The computer program product of claim 44 in which step (f) further comprises processing the intermediate value of the central image pixel output from the tone scale function with a function that is the inverse of the scaling function.

46. The computer program product of claim 34 in which step (b) includes the application of a predetermined tone scale function and step (e) comprises normalizing the coordinates of the tone scale function based on the statistical characteristic.

47. The computer program product of claim 34 in which step (b) includes application of a predetermined tone scale function, and the method further comprises the step of adjusting a parameter of the tone scale function based on the statistical characteristic of the region.

48. The computer program product of claim 47 in which the step of adjusting a parameter of the tone scale function comprises varying the slope of the tone scale function.

49. The computer program product of claim 34 in which the steps (c) – (f) are repeated for consecutive overlapping regions such that contiguous central pixels are processed through the tone scale conversion.

50. The computer program product of claim 49 wherein steps (e) – (f) include application of a predetermined tone scale function to all central image pixels processed through the normalized tone scale conversion.

51. The computer program product of claim 34 in which step (b) includes the application of a predetermined tone scale function having input and output coordinates, step (e) comprises normalizing the input coordinate of the tone scale function with a scaling function based on the statistical characteristic and normalizing the value of the central pixel output from the tone scale function based on the inverse of the scaling function, and then step (f) comprises mapping the value of the central pixel through the tone scale function to generate a scaled output pixel.

52. The computer program product of claim 34 in which step (b) includes the application of a predetermined tone scale function having input and output coordinates, step (e) comprises normalizing the value of the central pixel input to the tone scale function with a scaling function based on the statistical characteristic and normalizing the output coordinate of the tone scale function based on the inverse of the scaling function, and then step (f) comprises mapping the scaled value of the central pixel through the tone scale function to generate a processed output pixel.